REMARKS AND ARGUMENTS

Claims 11-16 are pending in the present divisional application, of which claim 11 is the sole independent claim. No claims have been amended or canceled.

Claims 11-13 and 16 were rejected under 35 U.S.C. § 103(a) over Beohner in view of Cox et al. or Kearney et al., further in view of Tanabe et al., and still further in view of Brown. Claims 14 and 15 were rejected under 35 U.S.C. § 103(a) over the aforementioned references and further in view of Muller and Kelada. Applicants respectfully traverse these rejections.

The present claim 11 recites an apparatus having a combination of features not disclosed or suggested by the cited references. Although the individual features may be found in the prior art, there is no suggestion therein to make the particular claimed combination. Elements from several prior art references cannot properly be combined in a rejection "unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01. The present rejection combines several features of claim 11 selected from different references, including the fractal distributor, flat heads, vessel diameter, and resin particle size. There is no showing of how the prior art "suggests the desirability" of the particular set of selections recited in claim 11, much less the additional selections required by the dependent claims.

Moreover, even if one skilled in the art somehow had made this set of selections from the prior art, the rejection does not demonstrate that there would have been a reasonable expectation of success, as required by M.P.E.P. § 2143.02. Applicants submit herewith the Declaration of Jay Alfred Miers, Jr., which explains in paragraph 5 that the features recited in the claims are interdependent, and could not have been selected independently from different sources with any reasonable expectation of success. Therefore, Applicants respectfully submit that their claimed invention should not be considered obvious over the references, and that the claims should be allowed.

Moreover, the present invention provides the unexpected benefit of allowing operation at higher linear space velocity than conventional systems. The Declaration of Jay Alfred Miers, Jr. describes and explains the benefits of the present invention in paragraph 4. The present invention allows construction of a compact ion exchange system that can accommodate high flow rates through a relatively small resin bed (i.e., high linear space velocity), while achieving good performance and efficiency (see data in table in paragraph 4). Not only was there no motivation in the cited art that would have guided one of ordinary skill in the art to make the claimed combination of features, there was not even any suggestion in the art that the aforementioned benefits could be realized in any system. Applicants respectfully submit that their invention provides unexpected benefits that would not have been achieved by one of ordinary skill in the art based on the

teachings of the prior art, and therefore, that the claims should be allowed over the prior art.

If the Examiner has any further objections to the application, Applicant respectfully requests that the Examiner contact Applicant's undersigned attorney by telephone at (215) 592-2423 to discuss the remaining issues.

Respectfully submitted,

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Rohm and Haas Company
100 Independence Mall West
Philadelphia, PA 19106-2399
September 22, 2004

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No. A01425A
KC/

In re application of:
Jay Alfred Miers Jr. et al.

Serial No.: 10/817,639 : Group Art Unit: 1724

Filed: April 2, 2004 : Examiner: Ivars C. Cintins

For: FLUID TREATMENT SYSTEM

DECLARATION UNDER 37 C.F.R. § 1.132

I, Jay Alfred Miers, Jr., of 178 Flint Road, Langhorne, PA, declare and say as follows:

1. I have been employed at the Rohm and Haas Company since 1980. I have a Bachelor of Chemical Engineering degree from the University of Delaware (BCHE,1980). I have been involved with our Ion Exchange Resins business since 1984. My job responsibilities have included product and process design in the area of ion exchange systems. I am currently the Global Market Development Manager specifically responsible for developing advanced deionization systems to satisfy market needs.

2. I have been the coinventor of three U.S. patent applications filed during my tenure at Rohm and Haas Company.

3. As a co-inventor of the present invention, I am thoroughly familiar with its subject matter and background. I have read the Official Action dated July 13, 2004 in the above-mentioned US patent application (Serial No. 10/817,639).

4. In September and November, 2003, I supervised full scale tests using the method claimed in this application at the Rohm and Haas Company plant in Chauny, France. The operating parameters and the data obtained from the method of the present invention and from a conventional ion exchange method are tabulated below. Both systems had two cation exchange vessels and two anion exchange vessels.

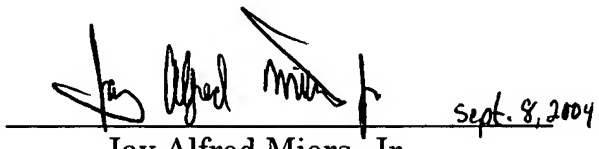
Parameter	Conventional Method	Present Invention
vessel head	dome	flat
flow distributor	nozzle plate	fractal manifold
resin particle size	550 +/- 50 µm	550 +/- 50 µm
degasifier	forced draft	membrane
vessel inside diameter	1.384 m (cation) 1.784 m (anion)	1.19 m (both)
resin volume	2.5 m^3	1.275 m^3
service flow rate	50 m^3/hr	60 m^3/hr
linear space velocity (service flow rate/ resin volume)	20 hr^{-1}	43 hr^{-1}
conductivity of output	<0.5 µS/cm	<0.5 µS/cm
silica	<10 ppb	<10 ppb
regeneration time	3-3.25 hr	<1 hr
water use (bed volumes, BV)	5.1-6.8 BV	2 BV

It is evident from the data that the system of this invention can be operated at a much higher linear space velocity, a measure of volume throughput relative to vessel size, than the conventional system. Moreover, regeneration times are greatly reduced, which reduces the time during which the vessels are not producing deionized water, and water use in bed volumes also is reduced considerably. Consequently, the system of this invention can treat water at high volume flow

rates using smaller vessels, relative to conventional systems, with similar performance. This discovery allows manufacture of a compact ion exchange system that is readily shipped in a standard container, and which also has greater efficiency, measured in terms of waste and time off-line.

5. Service flow rate, resin particle size, and resin bed volume (limited by the height and inside diameter of the vessel) are interdependent parameters that cannot be selected independently with any reasonable assurance of successful operation. For example, the Brown reference, which is cited in the Office Action as disclosing that typical ion exchange resins have a particle size of approximately 500 microns, teaches the use of much smaller resins, i.e., 120 microns, in order to achieve a bed height less than 30 inches (Col. 3, lines 35-61). Without the superior kinetics of the smaller resin beads, the smaller bed height of Brown would result in inferior performance. This is one illustration of how difficult it is to arbitrarily select the aforementioned parameters with any reasonable expectation of success.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United State Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Jay Alfred Miers, Jr.

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Date: September 8, 2004